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National Security and  
International Affairs Division

B-226450

August 30, 1990

The Honorable Les Aspin  
Chairman, Committee on  
Armed Services  
House of RepresentativesDTIC  
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Dear Mr. Chairman:

This report is in response to your request for information about the Tactical Fighter Roadmap in light of possible cuts in tactical forces. You asked us whether the Tactical Fighter Roadmap clearly shows the force structure included in the President's budget request and supporting Five Year Defense Plan. On March 23, 1990, we briefed your staff on the results of our work. This report summarizes and updates that information.

Our objectives were to (1) provide information on the roadmap's purpose, development, basis, and relationship to the defense budget process and (2) identify differences between the force structure (i.e., the number and type of aircraft) in the October 1989 roadmap and the force structure in the amended fiscal year 1990/1991 budget and supporting April 1989 Five Year Defense Plan. The defense plan is a cost projection of the Department of Defense's (DOD) approved programs for the budget year and four additional years.

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Results in Brief

The Tactical Fighter Roadmap presents a strategy for acquiring and maintaining the force structure desired by the tactical commanders. The roadmap, however, is not an official strategy approved by DOD or Air Force Headquarters. The Tactical Air Command (TAC), which represents the commanders of U.S. Tactical Air Forces (TAF), develops and revises a briefing on the roadmap based on threat considerations, force structure positions, and fiscal constraints. During the budget process, the roadmap is used by TAC and Air Force Headquarters in developing budget requests. Portions of the briefing have also been presented to the Congress during appropriations hearings.

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The October 1989 roadmap includes TAF's modernization plans for the 36 wings<sup>1</sup> of tactical fighters assigned to its active, Air National Guard, and

<sup>1</sup>A tactical fighter wing usually consists of 3 squadrons of 24 combat aircraft each. TAC estimates it needs about 100 aircraft for every fighter wing: 72 for combat, 18 for training, 8 for backup inventory, and 2 for testing. The roadmap shows only combat aircraft.

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reserve forces. It reflects the fiscal year 1990/1991 budget request but presents a tactical force structure in the years beyond 1991 that is different from the force structure presented in the April 1989 defense plan. The defense plan and the roadmap do not agree on the number and type of aircraft scheduled to be purchased or retired after fiscal year 1991. For example, they differ on the proportion of close air support aircraft to total aircraft in the force and the type of aircraft to be used in that mission. One reason for the difference is that the roadmap shows the A-16 aircraft entering the force, but the defense plan does not. This and other differences are not readily apparent because the defense plan is not shown in summary form, as is the roadmap.



## Background

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TAF consists of TAC, which is responsible for updating the roadmap, the U.S. Air Forces in Europe, and the Pacific Air Forces. Although TAF operates many types of aircraft, the roadmap consists of only tactical fighter aircraft that perform air-to-air and air-to-ground combat missions. These include A-7, A-10, F-4, F-4G, F-15, F-15E, F-16, F-111, and F-117A aircraft. The roadmap's future force also includes the new air-to-air aircraft, the Advanced Tactical Fighter, and new air-to-ground aircraft, the Advanced Tactical Aircraft and the A-16. Other aircraft assigned to TAF are not part of the 36-wing force because, according to TAC officials, they perform support, not fighter, missions such as reconnaissance and forward air control.

The defense plan summarizes the programs approved by DOD for forces and associated resources. The defense plan projects budgets for 5 years and the number of aircraft for 8 years. The April 1989 defense plan contained approximately \$1.5 billion for operating and maintaining 36 wings of tactical aircraft in fiscal year 1990. In addition, the fiscal year 1990/1991 budget requested \$4.2 billion to purchase 186 more tactical aircraft.

## Roadmap Purpose, Development, Basis, and Use

The Tactical Fighter Roadmap presents TAF's strategy for acquiring and maintaining the number and type of tactical aircraft it desires to modernize and sustain for its 36-wing force. TAC develops and revises the roadmap based on threat considerations, TAF force structure positions, and fiscal constraints. During the budget process, the roadmap is used in preparing budget requests, and portions have been briefed to the Congress during appropriations hearings.

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## Roadmap Is a Plan to Modernize Tactical Forces

The October 1989 roadmap identifies TAF's desired number and type of aircraft and plans for improvements. The roadmap includes plans for introducing new and retiring old aircraft over the next 10 years and the number and type of aircraft to be purchased. To sustain a modern 36-wing force, the October 1989 roadmap advocated buying 209 aircraft each year. The roadmap does not include cost estimates for operating and maintaining these aircraft.

The roadmap groups the aircraft according to their use and identifies the force mix (the proportion of each group to the total force). Specifically, the F-15 and Advanced Tactical Fighter are for air-to-air missions, whereas the A-7, A-10, A-16, F-4G, F-111, and F-117A are for air-to-ground missions. The F-4, F-15E, and F-16 are designated as multirole because they can perform either air-to-air or air-to-ground missions. According to the roadmap, the force mix is to be no more than 25 percent air-to-air, no more than 35 percent air-to-ground, and at least 40 percent multirole.

The roadmap recognizes the need to improve aircraft capabilities, but it does not include detailed plans for these improvements. For example, to keep the force modern, the roadmap lists avionics, engines, airframes, and munitions as areas requiring improvements. However, it does not include a schedule showing when each aircraft type should receive improvements, what the specific improvements should be, or an estimate of what the improvements will cost.

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## Roadmap Development and Revision

According to a TAC official, there is no official guidance on roadmap development. The official said that TAC informally consults with the TAF commanders and Air Force Headquarters officials on the roadmap's content and updates the roadmap when there are significant changes in a budget or when TAF officials agree on aircraft force structure changes. A briefing on the revised roadmap is presented to TAF commanders at their semiannual conference and, if approved, becomes an official TAF position. Since it is a TAF position, approval is not requested from Air Force Headquarters or DOD, according to TAC officials.

## Roadmap Based on Threat Considerations, TAF's Desires, and Fiscal Constraints

The roadmap's modernization strategy focuses on meeting the threat within some fiscal constraints. TAF considers the current and future threat in determining the need for and development of tactical aircraft, the roadmap's annual procurement goal, and the relative number of aircraft for each mission. However, fiscal constraints limit the total number of aircraft in the force.

The aircraft contained in the roadmap have been justified through TAF's requirements process, which bases the need for and development of each aircraft on the operational threat specified in various documents. The Systems Operational Requirements Document, for example, contains an assessment of foreign military capabilities and defines the aircraft requirements necessary to operate effectively against such capabilities.

Threat is also considered in developing the roadmap's procurement goal. The October 1989 roadmap states that TAF's goal is to purchase 209 aircraft each year to sustain a modern 36-wing force. This goal is based on TAF's desire to maintain the average age of tactical aircraft at no more than 11 years. According to TAC officials, if the TAF fighter force maintains an average age of 11 years or less, the force's capabilities will keep pace with the threat.

TAF also considers threat information in maintaining the roadmap's force mix. According to TAC officials, the roadmap's force mix was justified by a TAC study that considered the historical wartime use of tactical aircraft, the existing force mix, and Air Force Headquarters' Planning Force. The Planning Force is the Air Force's determination, without considering fiscal constraints, of the number of each type of aircraft required to be reasonably assured of success against the projected threat. The TAC study resulted in TAF guidelines for the percent of the force to be assigned to air-to-air, air-to-ground, and multirole groups. According to a TAC official, TAC uses these proportions when planning the roadmap's desired schedules for introducing and retiring aircraft.

TAF's decisions on individual aircraft have also initiated changes in the roadmap. These changes may include new aircraft for meeting the threat or different numbers of a certain type aircraft to be maintained in the force. If TAF decides it needs a new type of aircraft, TAC officials stated that the roadmap would be changed to show the procurement and introduction of that aircraft into the force. For example, the roadmap advocates procuring the A-16, even though DOD has not approved or funded the A-16's procurement.

Fiscal constraints also affect the size of the force and the pace of force modernization in the roadmap. For example, although the 1984 roadmap presented a goal for the aircraft fighter force to grow to 40 wings to meet the threat, the goal was subsequently reduced to 36 wings in response to budgetary pressures. The next roadmap will show an even smaller force that, according to a TAC official, will reflect Air Force Headquarters' budget submission to DOD for fiscal years 1992 to 1997.

The roadmap has been revised to reflect the most recent President's budget. For example, although the October 1989 roadmap specifies a goal of buying 209 aircraft each year, the roadmap shows that only 186 aircraft will be procured in fiscal years 1990 and 1991, the same amount contained in the President's budget request for those years.

### Roadmap Used During Budget Process

Both TAC and Air Force Headquarters use the roadmap during the budget process. According to a TAC planning official, TAC requests funding for roadmap items. For example, TAC's budget request to Air Force Headquarters for fiscal years 1992 to 1997 supported the October 1989 roadmap's plan to buy the A-16 aircraft. According to an official at Air Force Headquarters, the roadmap is used in considering TAC's budget request.

Although it is not an official Air Force position, the roadmap is used by officials at Air Force Headquarters to brief congressional committees during the budget process. Air Force officials consider the roadmap valuable because it presents an overall picture of TAF's future force needs. Therefore, the Air Force uses the roadmap to advocate aircraft procurement in its budget submission to the Congress. For example, officials with the Office of the Secretary of the Air Force and the Chief of Staff of the Air Force have briefed the House Committee on Appropriations each year from 1984 to 1988 on portions of the roadmap. Specifically, the fiscal year 1988 Air Force Acquisition Statement affirmed that determining "the appropriate quantity and mix of fighter aircraft has been guided by the Tactical Fighter Roadmap." Moreover, the Air Force's statement to the Congress for the fiscal year 1989 appropriations hearings said that the Air Force uses the Tactical Fighter Roadmap as a guide to achieve and maintain the tactical fighter force.

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## Differences Between the Roadmap and the Defense Plan

The October 1989 roadmap's projected force and procurement plans for fiscal years 1990 and 1991 closely coincided with those in the April 1989 defense plan. However, some differences occur after fiscal year 1991 in the planned number and type of aircraft to be purchased, maintained, and retired. The impact of these differences in projected future tactical forces is not readily apparent, since the defense plan is not presented in summary form, as is the roadmap.

Our comparison of tactical forces projected in the defense plan and the roadmap identified differences in force mix, total procurement, type of aircraft maintained in the force, and aircraft retirement schedules. For example, after fiscal year 1991, the roadmap's close air support strategy is to upgrade or retire the A-7s, retire the A-10s, buy A-16s, and modify some F-16s while maintaining about 27 percent, or 9.5 wings, of the tactical force as close air support aircraft.

The defense plan's provisions for close air support forces is not readily apparent. The defense plan differs from the roadmap in that it (1) shows the retirement of the A-7 aircraft 3 years earlier, (2) indicates more of the A-10 aircraft are maintained in the tactical forces for a longer period, and (3) excludes procurement of the A-16 aircraft. Thus, the defense plan appears to show a gradual decrease of close air support aircraft to a level well below 27 percent as A-7s retire and are not replaced by A-16s. However, according to DOD, Air Force Headquarters, and TAC officials, the Air Force's strategy will be to use multirole F-16s in the close air support mission to maintain the percent of the tactical force currently designated to perform close air support.

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## Conclusions and Observations

The roadmap and the defense plan present two different long-term projections of future tactical forces. However, these differences are not readily apparent because the defense plan is not shown in summary form and does not show how aircraft will be used. A comparable DOD roadmap that captures the long-term tactical force structure that DOD proposes to buy and maintain might be beneficial. A DOD roadmap could summarize the tactical fighter programs approved by DOD and supported by its defense plan and be presented in a format similar to the Tactical Fighter Roadmap. The DOD roadmap presentation could be submitted to the Congress with the President's budget for use in assessing the long-term effect of procurement plans and budget requests for tactical forces, particularly in light of a tighter budget and anticipated changes in the Air Force's force structure.

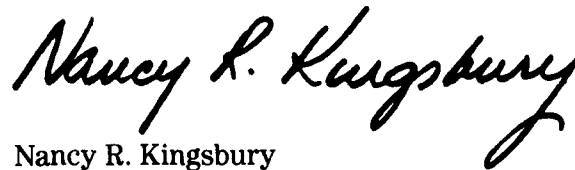
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The types of tactical missions and the aircraft that perform them are described in appendix I. Our objectives, scope, and methodology are discussed in appendix II.

As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days after its issue date. At that time we will send copies to interested congressional committees; the Secretaries of Defense and the Air Force; and the Director, Office of Management and Budget.

Please contact me at (202) 275-4268 if you or your staff have any questions concerning this report. Major contributors to this report are listed in appendix III.

Sincerely yours,

A handwritten signature in black ink that reads "Nancy R. Kingsbury". The signature is written in a cursive style with a large, stylized 'N' and 'K'.

Nancy R. Kingsbury  
Director  
Air Force Issues



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## Abbreviations

DOD	Department of Defense
TAC	Tactical Air Command
TAF	Tactical Air Forces



# Descriptions of Tactical Missions and Aircraft

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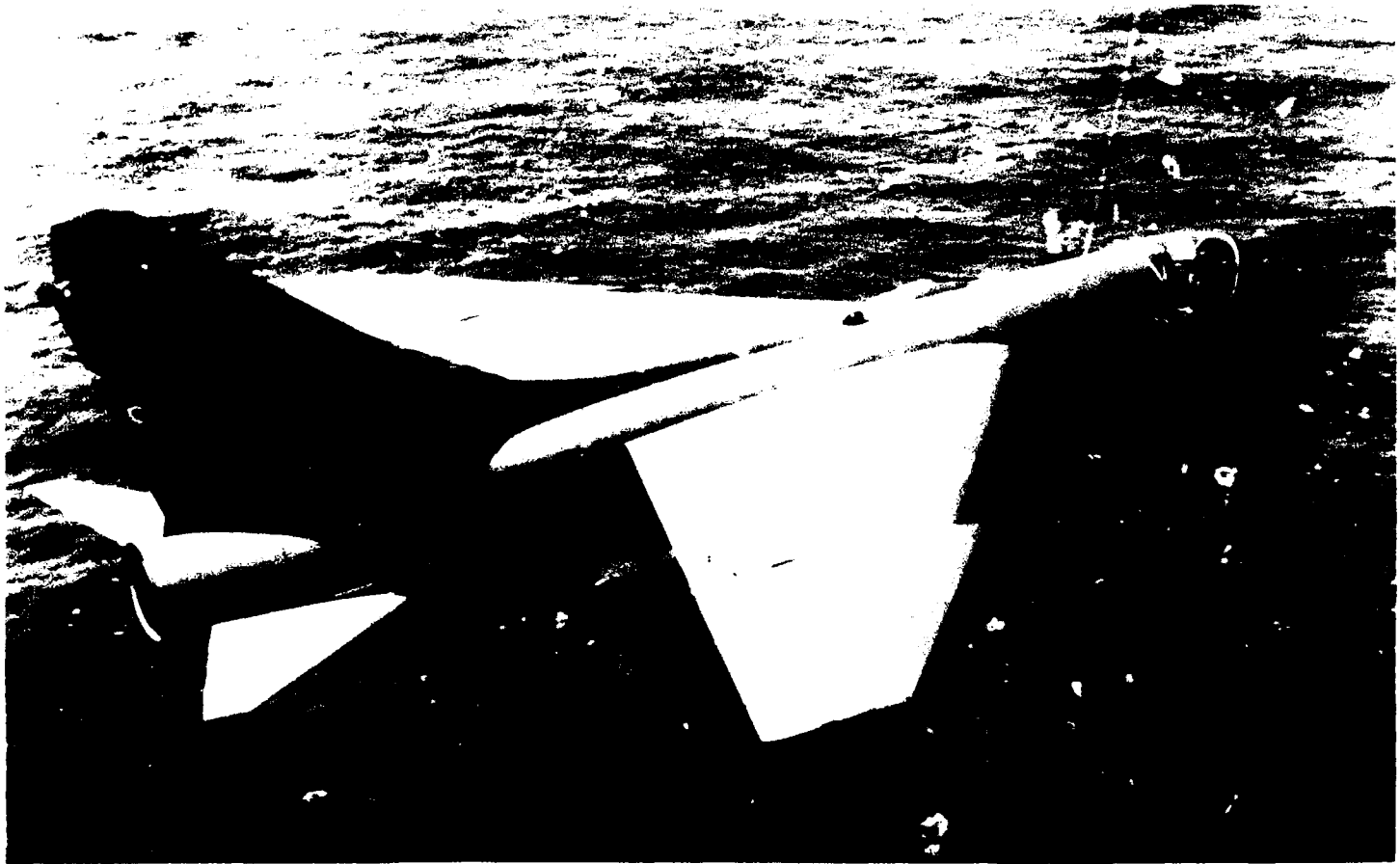
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The Tactical Fighter Roadmap includes plans for aircraft assigned to perform tactical air-to-air and air-to-ground missions. Air-to-air missions are to achieve air superiority. Air-to-ground missions include close air support, air interdiction, and suppression of enemy air defenses. Close air support and air interdiction missions are to provide assistance to ground forces. Suppression of enemy air defenses mission is to neutralize, degrade, or destroy surface enemy air defense systems in a specified area. The aircraft that perform one or more of these tactical missions are described on the following pages. Descriptions include performance characteristics and, according to the October 1989 roadmap, the number of each type of combat aircraft and their average ages as of fiscal year 1989.

## A-7D

The A-7D, shown in figure I.1, is a single-engine, single-seat, close air support and air interdiction aircraft that can carry a 20-millimeter gun and up to 15,000 pounds of missiles and bombs. It is a subsonic aircraft that, with external fuel tanks, can achieve a range of 2,871 miles. The A-7K is a two-seat version of the aircraft. The roadmap showed 270 A-7s in the inventory with an average age of approximately 16.6 years.

Figure I.1: A-7D

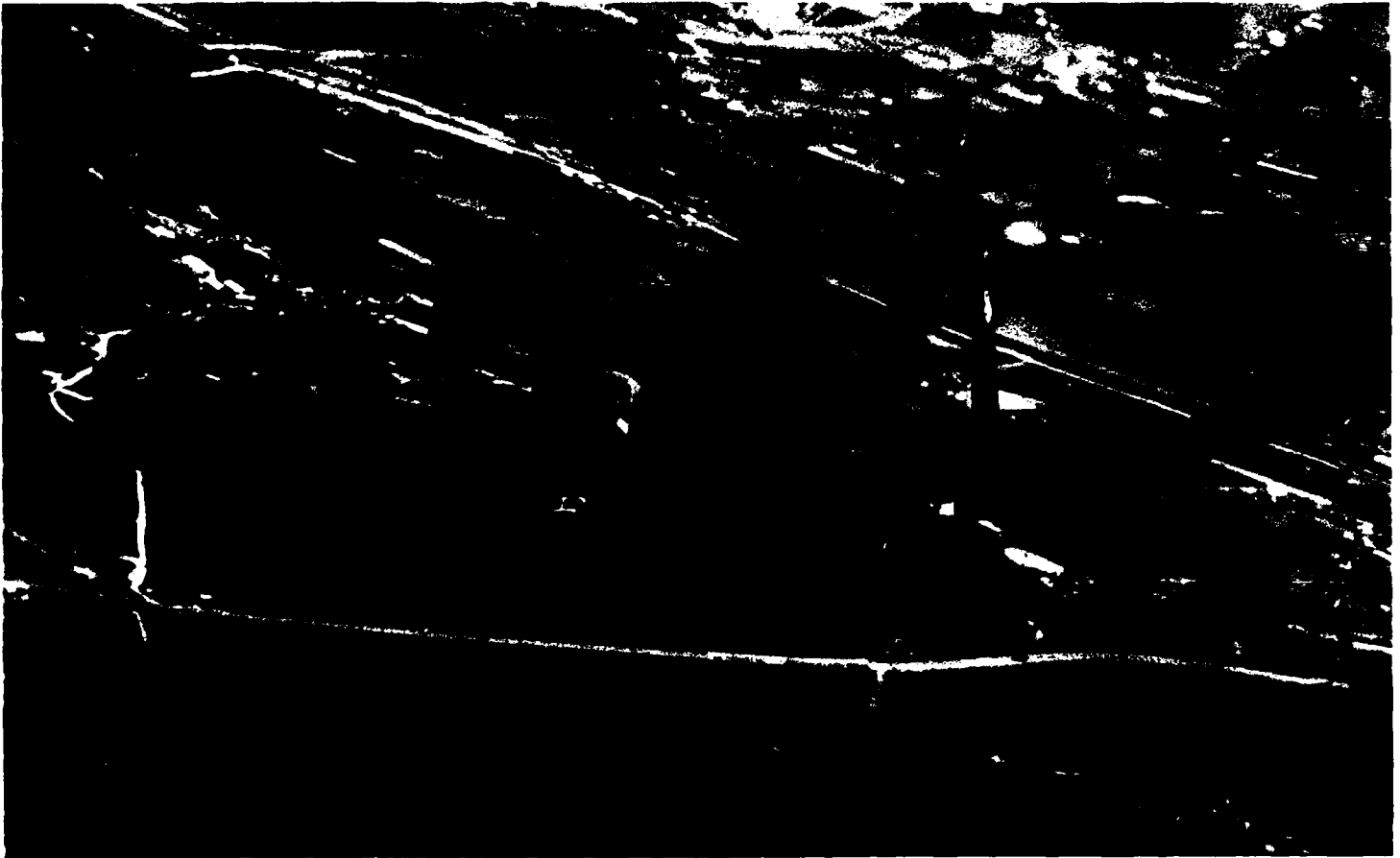


Source: Air Force

## **A-10**

The A-10, shown in figure I.2, is a single-seat, twin-engine, close air support aircraft that has an internally mounted 30-millimeter, 7-barrel cannon and can carry up to 16,000 pounds of ordnance, including various missiles and bombs. It is a subsonic aircraft that has a range of 288 miles and can also remain airborne for 1.7 hours. The roadmap showed 432 A-10s in the inventory with an average age of approximately 8.8 years.

**Figure I.2: A-10**

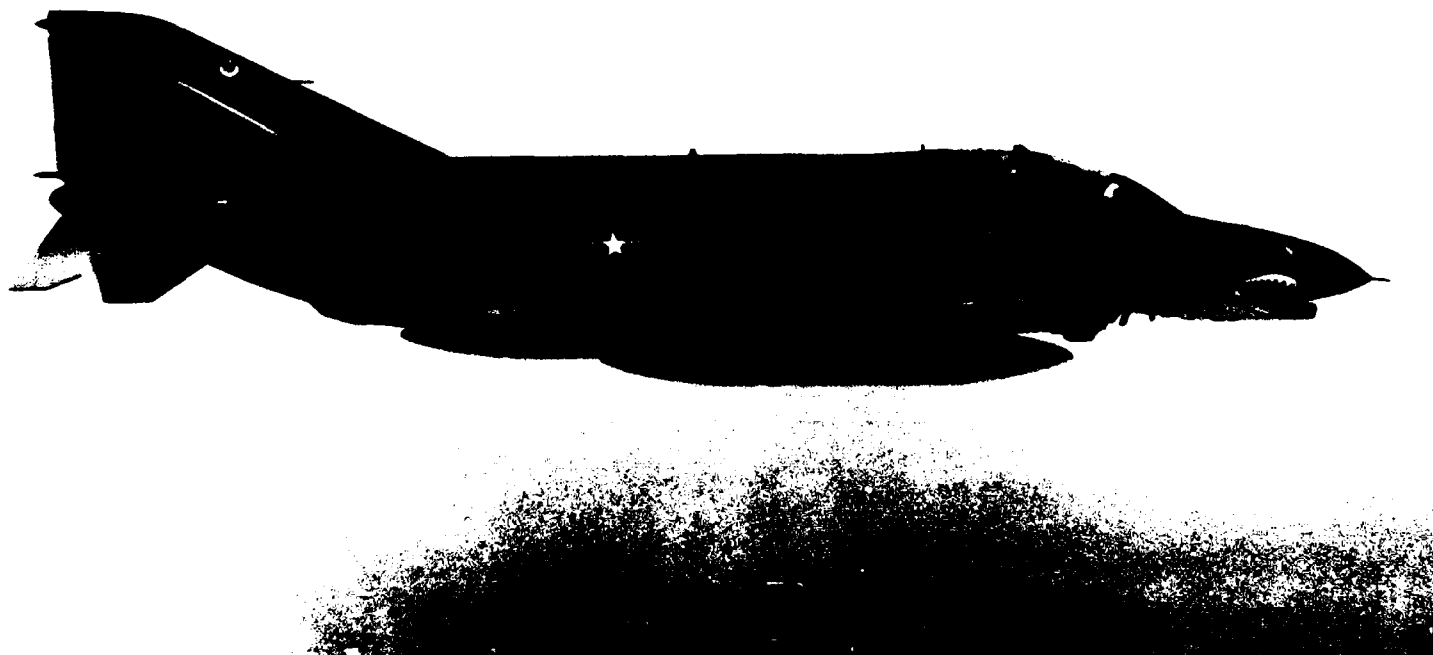


Source: Air Force

**F-4E**

The F-4E, shown in figure I.3, is a two-seat, twin-engine, all-weather, air-to-air and air-to-ground aircraft that can carry a 20-millimeter gun and various missiles. It is a supersonic aircraft that has a range of about 700 miles and can achieve a maximum speed of twice the speed of sound. The roadmap showed 324 F-4Es in the inventory with an average age of about 18.9 years.

**Figure I.3: F-4E**

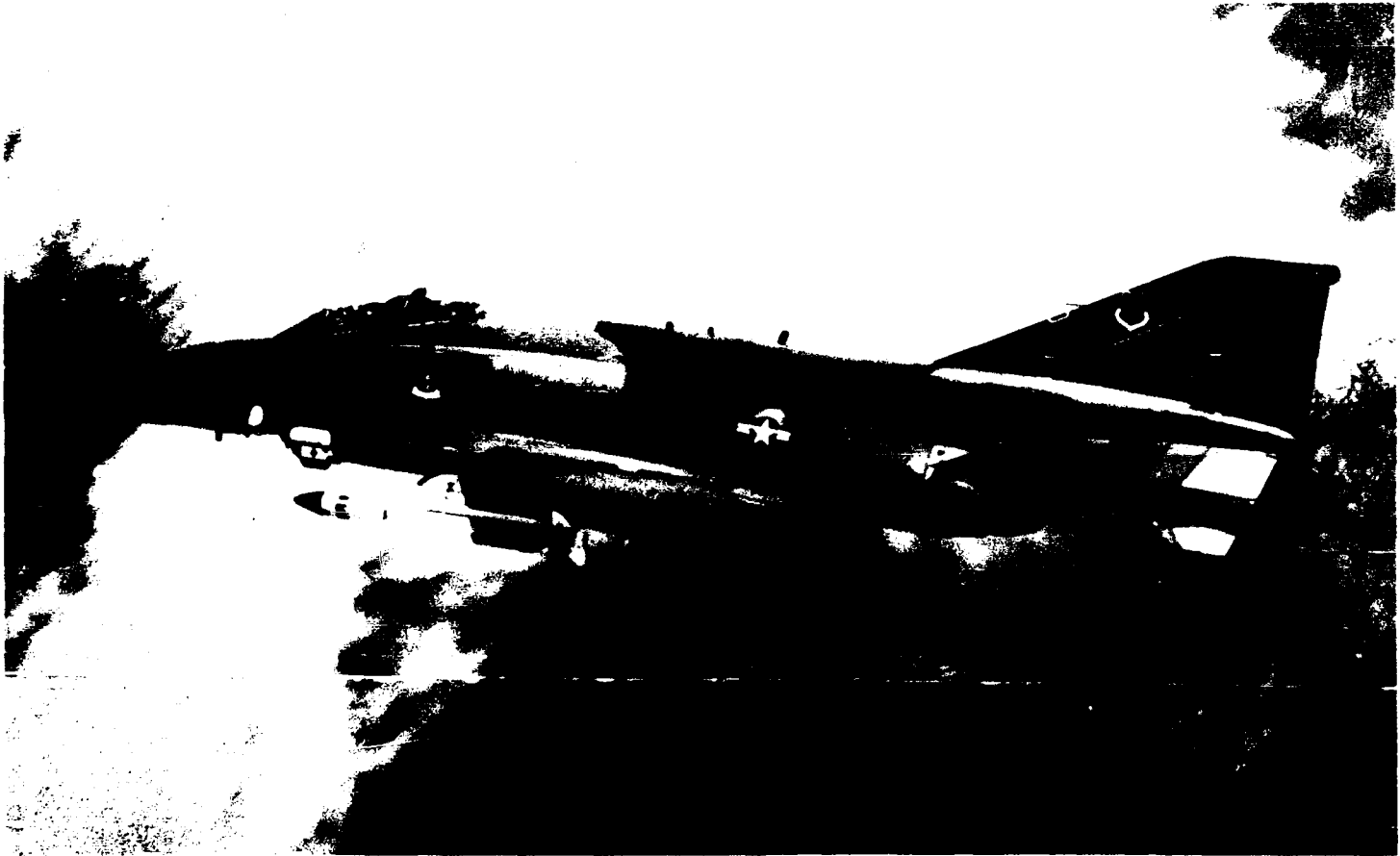


Source: Air Force

## F-4G

The F-4G, shown in figure I.4, is a modified F-4E. The gun on the F-4E has been replaced by electronic warfare equipment, which enables the F-4G to suppress enemy air defenses. The F-4G's primary armament is various missiles. The roadmap showed 72 F-4Gs in the inventory with an average age of about 19.1 years.

Figure I.4: F-4G



Source: Air Force

## F-15C

The F-15C, shown in figure I.5, is a single-seat, twin-engine, air-to-air aircraft that can carry a 20-millimeter gun and various missiles. It is a supersonic aircraft that can achieve a maximum speed of 2.5 times the speed of sound and has a range of 2,878 miles. Other versions of the air-to-air fighter aircraft include the single-seat F-15A and the two-seat F-15B and D. The roadmap showed 504 F-15s in the inventory with an average age of about 8.4 years.

Figure I.5: F-15C



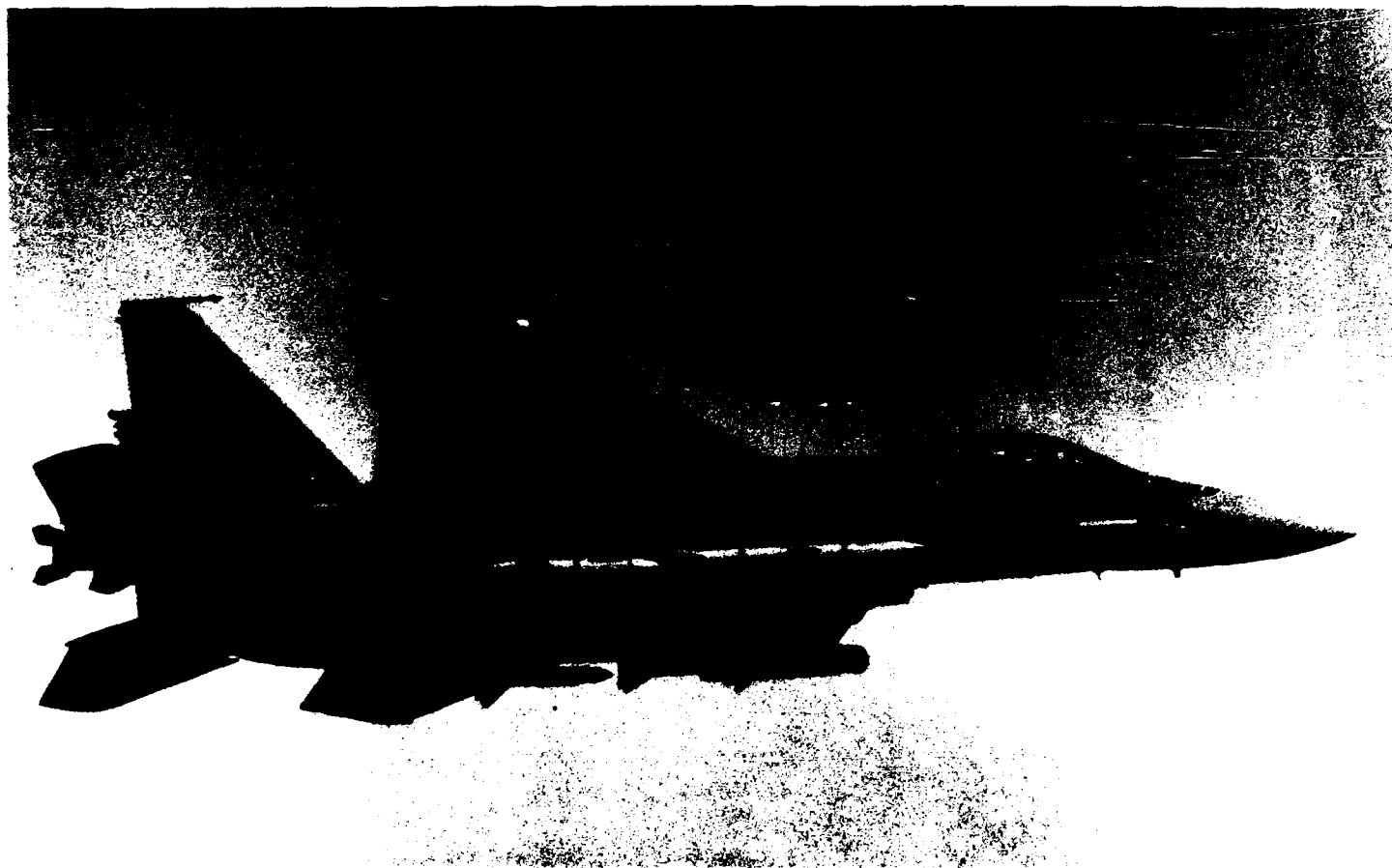
Source: Air Force



## F-15E

The F-15E, shown in figure I.6, is a two-seat, twin-engine, all-weather, air-to-air and air-to-ground aircraft that can carry up to 24,500 pounds of ordnance, including various missiles and bombs. It is a supersonic aircraft that can achieve a maximum speed of 2.5 times the speed of sound and, with external fuel tanks, has a range of 3,570 miles. The roadmap showed 24 F-15Es in the inventory with an average age of approximately 0.5 years.

Figure I.6: F-15E



Source: Air Force

## F-16C

The F-16C, shown in figure I.7, is a single-seat, single-engine, day or night, air-to-air and air-to-ground aircraft that can carry a 20-millimeter gun and various missiles and bombs. It is a supersonic aircraft that can achieve a maximum speed of 2 times the speed of sound and has a range of about 2,000 miles. Other versions of the aircraft include the single-seat F-16A and two-seat F-16B and D. The roadmap showed 798 F-16s in the inventory with an average age of about 4.3 years.

Figure I.7: F-16C

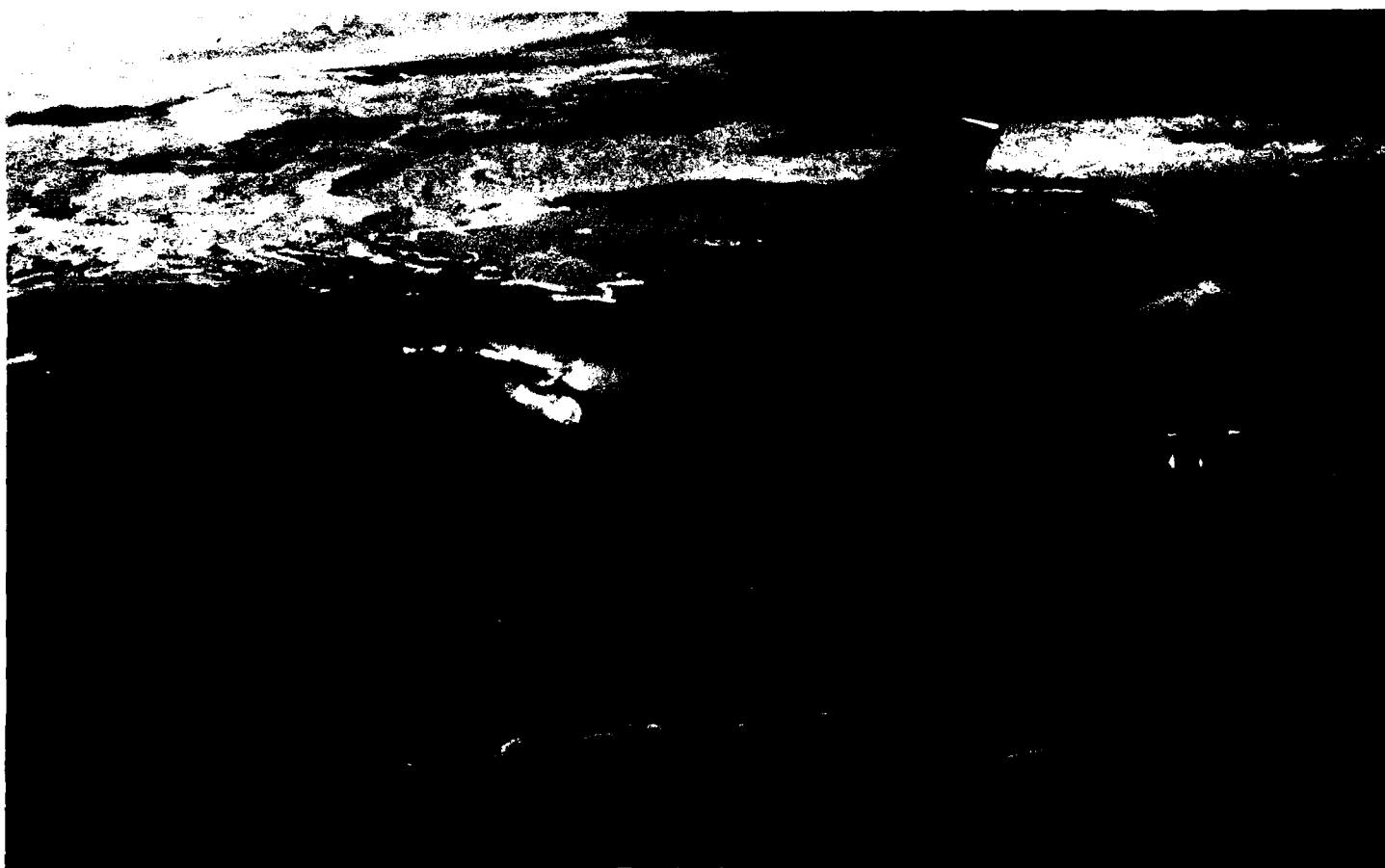


Source: Air Force

**F-111F**

The F-111F, shown in figure I.8, is a two-seat, twin-engine, day or night, long-range air interdiction aircraft that can carry up to 25,000 pounds of various missiles and bombs. It is a supersonic aircraft that can achieve a maximum speed of 2.5 times the speed of sound and has a range of 2,925 miles. The roadmap showed 192 F-111s in the inventory with an average age of about 17.9 years.

**Figure I.8: F-111F**



Source: Air Force

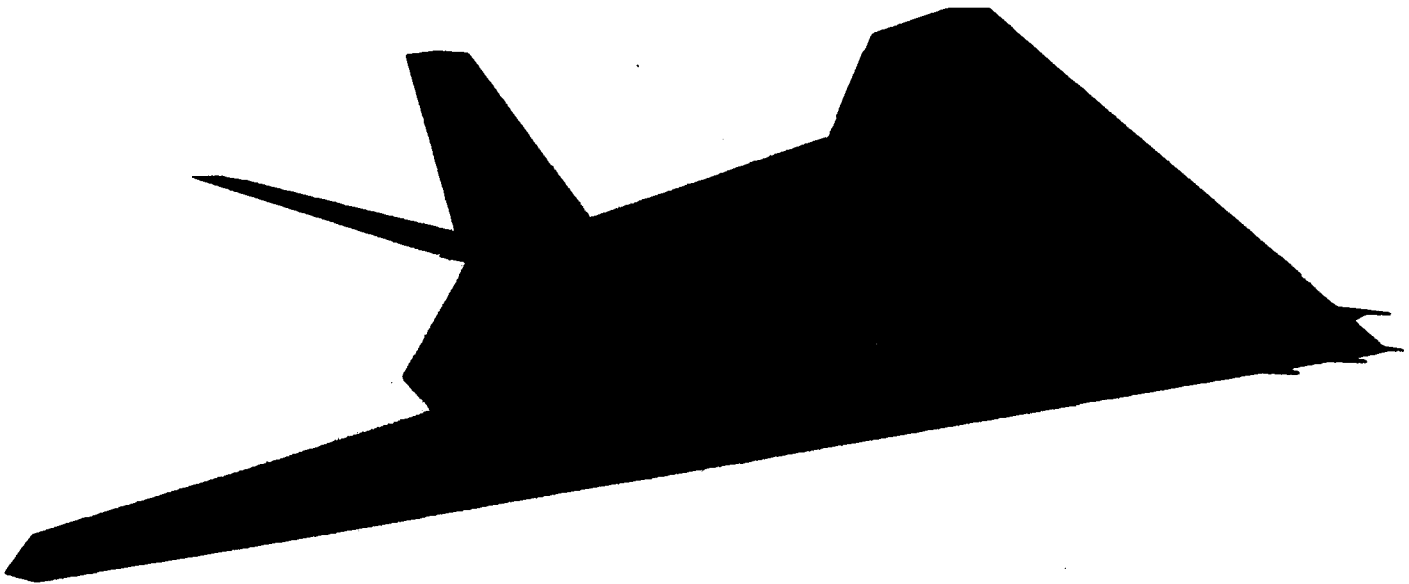
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**F-117A**

The F-117A, shown in figure I.9, is a single-seat, twin-engine, air-to-ground aircraft. Its armament and performance data are highly classified. The roadmap showed 35 F-117As in the inventory with an average age of about 3.1 years.

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**Figure I.9: F-117A**



Source: Air Force

# Objectives, Scope, and Methodology

Our objectives were to (1) provide information on the Tactical Fighter Roadmap's purpose, development, basis, and relationship to the defense budget process and (2) identify differences between the force structure in the roadmap and the force structure in the amended fiscal year 1991 budget and supporting Five Year Defense Plan. At the time of our review, the defense plan supporting the amended fiscal year 1991 budget had not been published due to uncertainties in the international situation. Therefore, we identified differences between the April 1989 defense plan, which supported the President's amended fiscal year 1990/1991 budget, and the October 1989 roadmap.

To obtain information on the roadmap, we interviewed the officials responsible for its revisions at TAC Headquarters, Langley Air Force Base, Virginia; reviewed the summary briefing on the roadmap and the supporting force mix, average aircraft age, and affordability briefings; and analyzed TAC's aircraft modernization strategies, including aircraft inventory and procurement for each aircraft. We also reviewed TAC regulations to identify how aircraft development and procurement is justified and how roadmap development relates to budget development.

We reviewed Air Force regulations on the planning process and DOD regulations on its planning, programming, and budgeting system at Air Force Headquarters, Washington, D.C. We interviewed Air Force Headquarters officials to identify how the Air Force implements the DOD planning, programming, and budgeting system, how the Air Force develops the Planning Force, and how the roadmap is used during budget development.

To identify differences between the force structure in the roadmap and in the defense plan, we compared the numbers of each type of aircraft for fiscal years 1990 through 1997. The Assistant Secretary of Defense (Comptroller) provided us with the published copy of the defense plan and a computer tape containing the individual data that are aggregated to produce the printed copy.

We did not perform a reliability assessment of the defense plan data. However, these data are reviewed internally by DOD before they are released by the Comptroller. Further, we used the printed defense plan as an internal control to check the accuracy of information retrieved from the computerized data. The budget year data were consistent with other budget documents.

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**Appendix II**  
**Objectives, Scope, and Methodology**

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We conducted our review from August 1989 to June 1990 in accordance with generally accepted government auditing standards. As requested, we did not obtain official agency comments on this report. However, we discussed the information in this report with DOD and Air Force officials and included their comments where appropriate.

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## Major Contributors to This Report

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